

Remarks

The Official Action rejected claims 1-28. Claims 1-28 remain pending. Applicant respectfully requests reconsideration and allowance of the pending claims.

Claim Rejections Under 35 USC 101

The Official Action rejected claims 19 and 25 under 35 USC 101 for being directed to non-statutory subject matter. In particular, the Official Action purports that claims 19 and 25 are missing essential elements or steps which lead to a tangible result. However, the Official Action appears to indicate that overcoming the rejections under 35 USC 112 would overcome the rejections under 35 USC 101. Accordingly, the Applicant will address the 101 rejections inconjunction with the 112 rejections below. Applicant respectfully requests reconsideration of claims 19 and 25 and the withdrawal of the present rejections under 101 in view of the points made below.

Claim Rejections Under 35 USC 112

The Official Action rejected claims 1, 2, 6, 7, 13, 19 and 25 under 35 USC 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. Applicant respectfully requests reconsideration in view of the following.

Claims 1 and 7

The Official Action purports that the phrase "In a controller of a computing device that comprises a system memory and a codec" of the claim 1 and claim 7 preambles render claim 1 and claim 7 indefinite and unclear. In particular, the Official Action

indicates that it is unclear whether the controller or the computer device of claims 1 and 7 comprises the system memory and the codec. Applicant believes the original claims are clear when read in context. However, to expedite prosecution, Applicant has amended claims 1 and 7 to more clearly indicate that the computing device comprises a system memory and a codec. Applicant respectfully points out that the present amendment does not change the scope of claims 1 and 7 and the scope of claims 1 and 7 as amended merely clarify the scope of claims 1 and 7 as originally filed. Withdrawal of the present rejection of claims 1 and 7 is respectfully requested.

Claim 2

The Official Action purports that the phrase “wherein reading comprises ...” renders claim 2 indefinite since it is not clear whether something in particular is being read or if the claim is referring to the reading of claim 1. Again, Applicant believes claim 2 is definite when read in context. However, to expedite prosecution, Applicant has amended claim 2 to clarify that the reading of claim 1 is being further modified by claim 2. Applicant respectfully points out that the present amendment does not change the scope of claim 2 and the scope of claim 2 as amended merely clarifies the scope of claim 2 as originally filed. Withdrawal of the present rejection of claim 2 is respectfully requested.

Claim 6

The Official Action purports that claim 6 is indefinite because no determination appears to be taking place. Applicant respectfully requests reconsideration. Claim 6 requires “determining to update the value” and further requires that the determination of

whether to update the value is “based upon the data transferred via the second interface.” Thus, a determination is being made. Applicant has further amended claim 6 to clarify that the “determining” occurs prior to the “writing”. Again, the present amendment does not change the scope of claim 6 as originally filed. Applicant respectfully requests reconsideration and withdrawal of the present rejection of claim 6.

Claim 13

The Official Action purports that claim 13 is indefinite because the terms “a buffer position” and “updates the buffer position” are unclear. In particular, the Official Action purports it is unclear whether such terms refer to a buffer position value stored in a register or memory module or a physical position of the buffer in the system. Claim 13 states “updates the buffer position ... to indicate a position in the buffer associated with the audio controller transferring between the buffer and the audio controller” which appears to the Applicant to clearly indicate that the buffer position indicates a position in the buffer as opposed to a physical position of the buffer in the system. However, to expedite prosecution, Applicant has amended to claim 13 to further clarify. Again, the present amendment does not change the scope of the claim 13 as originally filed. Applicant respectfully requests reconsideration and withdrawal of the present rejection of claim 13.

Claim 19

The Official Action took issue with the terms “a position in buffer controller” and “to indicate a position of the direct memory access controller in the buffer.” Applicant has amended claim 19 to further clarify the above aspects.

The Official Action further indicated that claim 19 appears to lack the essential action of actually transferring data which leads to the updating of a position value. Applicant respectfully points out that claim 19 is an apparatus claim that claims a controller comprising a first direct memory access controller and a position controller that each have certain characteristics. In particular, the first direct memory access controller is to transfer data and the position controller is to update a position value to indicate progress of the first direct memory access controller in transferring data.

Applicant respectfully points out that apparatus claims are generally drafted in such a manner that results in the claim encompassing an apparatus regardless of whether the apparatus is in operation (e.g. “use right”) or merely boxed up and sitting on a shelf ready to be sold (e.g. “make or sale rights”). To amend the claims to positively recite the action of transferring would restrict the scope of the claim to only an apparatus in “use” and thus limit the parties that could be found to infringe to those who actually use the apparatus as opposed to also including those who manufacture or sell the apparatus. Applicant respectfully submits that the addition of a “transferring” limitation is not needed or essential to meet the requirements of 35 USC 101 or 35 USC 112. Applicant respectfully requests reconsideration and withdrawal of the present rejection of claim 19.

Claim 25

The Official Action rejected claim 25 under the same rationale as claim 13. Again, the Applicant has amended claim 25 to further clarify the intended scope of claim 25 despite the fact claim 25 as originally filed appears to be definite.

Further, the Official Action rejected claim 25 for lacking the essential step of actually using the audio controller to stream data. Applicant respectfully points out that claim 25 is directed to a machine-readable medium having a plurality of instructions that when executed result in a computer device performing various operations. In particular, claim 25 is directed to instructions that configure and control an audio controller transfer, but are not directed to the audio controller itself. If the audio controller transfers nothing, the reading of claim 25 indicates such. Similarly, if the audio controller does transfer data, again the reading of claim 25 indicates such. Applicant respectfully submits that actually using the audio controller to stream data is not an essential element to the invention of claim 25. In a given embodiment, the actual transfer may or may not be the result of executing the instructions of the machine-readable medium. There is no reason under 35 USC 101, 102, 103 or 112 that precludes the Applicant from drafting claim 25 to encompass such embodiments. Applicant respectfully requests the rejection of claim 25 be withdrawn.

Claim Rejections under 35 USC 103 (Hoang/Mason)

The Official Action rejected claims 1, 3-7, 9-13, 16, 19, 20, 25, 27 and 28 under 35 USC 103(a) as being unpatentable over Hoang et al. (US 6,792,481) in view of Mason et al. (US 6,418,489). Applicant respectfully requests reconsideration and withdrawal of the present rejection.

Claim 1

Claim 1 requires reading data from a buffer of the system memory ***via a first interface*** and writing a value to the system memory ***via the first interface*** to indicate

the position in the buffer. In other words, the reading of data from the system memory and writing of the value to the system memory occurs via the same interface. While at first blush such a distinction may seem trivial, the above actually resolved a rather tricky issue regarding tracking progress of isochronous transfers across PCI Express interfaces. See paragraphs [0026] and [0027] of the present application.

As mentioned in the Official Action, Hoang does not disclose writing a value to system memory via the first interface. For such a teaching, the Official Action appears to rely on Mason which discloses a DMA controller that stores context information. While Mason may disclose storing context information, Applicant is uncertain whether Mason in fact discloses reading data from a buffer of the system memory via a first interface and writing a value to the system memory via the same first interface. Mason does not appear to be extremely clear regarding where and how buffers and context information are stored. Applicant respectfully requests the Examiner to point out the teaching in Mason regarding the first interface and the location of the saved context information and buffer so that the Applicant may better determine whether the proposed combination arrives at the claimed invention.

Even if the proposed combination includes all limitations of claim 1, one skilled in the art would not be motivated to make the proposed combination. Hoag appears to disclose a DMA controller 20 to better handle contention on a PCI bus 11. In particular, Hoag teaches using a FIFO 24 and a FIFO 26 to reduce the frequency at which samples are dropped from the CODEC 28 or the frequency at which data is not supplied to the CODEC 26 due to the DMA controller 20 not being able to gain access to the PCI bus 11. Hoag mentions nothing about a need to reduce the amount of registers in the

DMA controller 20. In fact, Hoag is trying to reduce the effect that contention on the PCI bus 11 has on the DMA controller 20. Moving registers of the DMA controller 20 to the memory 16 as suggested by the Official Action would merely make contention on the PCI bus 11 worse. For example, if the buffer current position 78 were moved from the DMA controller 20 to the memory 16, the DMA controller 20 would need to access the PCI bus 11 every time the DMA controller 20 need to read and/or write a value from/to the buffer current position 78. If the DMA controller 20 is already having trouble gaining access to the PCI bus 11, such access to the buffer current position 78 would only further reduce the performance of the DMA controller 20.

Moreover, the DMA controllers of Hoag and Mason are drastically different. Mason contains large amounts of context information due to its support for C language style FOR loops. Moreover, the Mason DMA controller supports context switching in which one DMA transfer may be interrupted so that a high priority DMA transfer may be processed. Due to its context switching support, the Mason DMA controller needs to maintain context information of an interrupted DMA transfer as it switches to and processes another DMA transfer. Given the amount of context information generated by the Mason DMA controller, the Mason DMA controller would need extensive hardware to retain context information of interrupted DMA transfers. Accordingly, Mason teaches saving context information for interrupted transfers in order to reduce the amount of circuitry needed to implement the DMA controller.

While Mason receives a benefit from saving context information, Hoag does not appear to have such a need. For one, Hoag does not appear to support interrupting one transfer in favor of another transfer. Applicant respectfully points out that the

interrupt hardware in the DMA controller of Hoag is used to generate periodic interrupts to activate associated software executed by the processor. See, Hoag at column 4, lines 23-58. Hoag does not appear to teach interrupting a current DMA transfer in order to initiate a higher priority transfer in a manner similar to Mason. As a result, Hoag appears to have no need to retain multiple contexts and thus has no need to save context information in a manner like Mason. In other words, modifying the DMA controller of Hoag in the proposed manner appears to only exacerbate the contention of the PCI bus 11 without providing any benefit.

Since one skilled in the art would have no motivation to make the proposed combination, a prima facie case of obviousness has not been established. Applicant respectfully requests the rejection of claim 1 be withdrawn.

Claims 3-7, 9-13, 16, 19, 20, 25, 27 and 28

The reasons stated above in regard to claim 1 are relevant to the patentability of claims 3-7, 9-13, 16, 19, 20, 25, 27 and 28. Applicant respectfully requests that the rejection of claims 3-7, 9-13, 16, 19, 20, 25, 27 and 28 be withdrawn.

Claim Rejections under 35 USC 103 (Hoang/Mason/AAPA)

The Official Action rejected claims 2, 8, 14, 17, 18, 23 and 24 under 35 USC 103(a) as being unpatentable over Hoang in view of Mason further in view of Applicant's Admitted Prior Art. Applicant reserves the right to later challenge whether the identified teaching qualifies as Admitted Prior Art. However, since claims 2, 8, 14, 17, 18, 23 and 24 all depend from allowable base claims, there appears to be no reason to challenge

at this point. Applicant respectfully requests that the rejection of claims 2, 8, 14, 17, 18, 23 and 24 be withdrawn.

Claim Rejections under 35 USC 103 (Hoang/Mason/ Su)

The Official Action rejected claims 15, 21, 22 and 26 under 35 USC 103(a) as being unpatentable over Hoang in view of Mason further in view of Su et al. (US 6,693,763). Each of claims 15, 21, 22 and 26 depend from one of claims 13, 19, and 25. Accordingly, each of claims 15, 21, 22 and 26 is allowable for the reasons stated above. Applicant requests the withdrawal of the present rejection.



Conclusion

The foregoing is submitted as a full and complete response to the Official Action.

Applicant submits that all remaining claims are in condition for allowance.

Reconsideration is requested, and allowance of all remaining claims is earnestly solicited.

Should it be determined that an additional fee is due under 37 CFR §§1.16 or 1.17, or any excess fee has been received, please charge that fee or credit the amount of overcharge to deposit account #02-2666. If the Examiner believes that there are any informalities which can be corrected by an Examiner's amendment, a telephone call to the undersigned at (503) 439-8778 is respectfully solicited.

Respectfully submitted,

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